

Head and Face Injuries in Brazilian Homicide Victims – A Retrospective Study

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Abstract

Introduction: Violence is a serious problem in view of its magnitude and impact on the health of the population in several countries. The aim of the study was to evaluate the occurrence of head and face injuries among homicide victims in a municipality in the Northeastern region of Brazil. **Materials and Methods:** A cross-sectional study carried out at the Police Station for Crimes against Persons of the Civil Police, which evaluated 168 police inquiries of homicide victims notified from January 2015 to December 2018. Variables analyzed were related to the Victim's sociodemographic profile, homicide characteristics and body region involved. Descriptive data analysis and Pearson's Chi-square test ($P < 0.05$) were performed. **Results:** There was greater involvement of men (92.9%) aged 20–29 years (36.3%), drug users (70.7%) and with a criminal record (65.9%). There was a predominance of simple homicides (92.3%), with greater occurrence on Sundays (16.7%), in the night shift (40.1%), revenge was the main reason for the crime (32%), and firearms as the main means used (89.2%). Regarding the number of body regions affected, victims were more frequently affected in 2 regions (36.5%). Head injuries were identified in 68.3% of victims, while face injuries represented 35.3%. There was an association between the presence of head injuries and number of injuries ($P < 0.05$). **Discussion:** The prevalence of head and face injuries resulting from homicide was high and victims are predominantly young men, drug users and those with a criminal record. The association was found between the presence of head injuries and number of injuries.

Keywords: Epidemiologic studies, homicide, maxillofacial injuries

INTRODUCTION

Violence is a worldwide phenomenon that contributes to deaths, diseases, disability, and several other social and health consequences.^[1] In 2015, the estimate of homicide victims was approximately 470,000 people worldwide, with a global rate of 6.4/100,000 inhabitants, with almost 60.0% of cases involving males aged 15–44 years.^[2] The region of the Americas has the highest homicide rate, 18.6/100,000 inhabitants, with almost 65,000 deaths occurring in Brazil.^[2] Worldwide, more than one in seven homicide victims are young men aged 15–29 years living in the Americas.^[3] High homicide rates put pressure on public health services, particularly in developing countries, where resources are scarce.^[3]

The International Classification of Crime for Statistical Purposes, developed by the United Nations Office on Drugs and Crime, defines homicide as the “unlawful death inflicted on a person with the intention of causing death or serious injury.”^[4] In Brazil, homicide is part of crimes against life of the Brazilian

Penal Code, being the first typified crime.^[5] The criminal investigation in the country is carried out by police agencies and gains materiality within the police inquiry instrument.^[6] In all cases of violent deaths, forensic medical autopsy is mandatory. The reports generated contain details on the mechanisms of deaths, injuries present and the results of alcohol and toxicological tests, which are essential for understanding the dynamics of events and the risk factors involved.^[7]

Studies carried out in hospital and forensic medical services in Brazil have demonstrated that violence has been one of the main

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etiologically factors of injuries in the head and face region,^[8-10] as well as in studies carried out in New Zealand,^[11] in Burkina Faso,^[12] the United States of America,^[13] and Taiwan.^[14] Injuries in this region aim to disqualify the victim's identity, act as a factor of intimidation, and in cases of violence with a firearm, there is an indisputable attempt to cause the death of victims due to the lethality and the power of destruction of face injuries.^[15]

Sociocultural factors, level of economic development, unsatisfactory management and infrastructure, alcohol and drug use, organized crime, increased life expectancy, and unemployment change the pattern of homicides in countries^[3] and consequently, of head and face injuries. Thus, violence prevention is the most effective method to avoid morbidity and mortality from these injuries. Epidemiological studies seek to understand the multifactorial aspects related to head and face injuries with the aim of determining the factors involved and the needs of developing effective health measures.^[16]

In this context, this research aimed to assess the occurrence of head and face injuries among homicide victims in a municipality in the Northeastern region of Brazil.

MATERIALS AND METHODS

Study design and location

This is a retrospective, cross-sectional study that evaluated police inquiries of homicide victims opened at the Police Station for Crimes Against the Person of the Civil Police in the municipality of Campina Grande, Paraíba, Brazil.

Data collection

About 168 police inquiries of homicide victims were systematic randomly selected from January 2015 to December 2018 were evaluated. A minimum sample of 40 police inquiries per year of registration was established. Therefore, for every 3 police inquiries, one was assessed up to a maximum of 40 inquiries. The exclusion criterion was the absence of information >10%.^[17]

Data collection was carried out between August and September 2019 by three trained researchers. The data collection instrument consisted of a questionnaire elaborated from information contained in the police inquiry based on the following documents: investigation form of the police station, police report (PR) and medical reports of the Forensic Science Institute of the State of Paraíba.

Variables analyzed were related to the victim's sociodemographic profile (year of occurrence, sex, age group, involvement with drugs and criminal history), homicide characteristics (type of homicide, day of the week, time of occurrence, homicide motivation, means used, number of projectiles, number of lesions), and body region involved (number of body regions involved and body location affected).

Data analysis

Data were tabulated into Microsoft Excel 2016 for Windows (Microsoft Press, Redmond, WA, USA) and later transferred to the IBM SPSS for Windows software,

version 20.0 (IBM Corp., Armonk, NY, USA). Initially, descriptive statistical analysis was performed, which corresponded to the calculation of absolute and relative frequencies. Then, bivariate analysis was used, using Pearson's Chi-square test, considering the value for rejection of the null hypothesis of $P < 0.05$.

Ethical considerations

This research followed rules established in Resolution No. 466/12 of the Brazilian National Health Council and was approved by the Ethics Research Committee of the State University of Paraíba (CAAE: 0719.0.133.000-11).

RESULTS

Regarding the characterization of victims, it was verified that there was greater involvement of men (92.9%) aged 20–29 years (36.3%), involvement with drugs (70.7%) and presence criminal record (65.9%) [Table 1]. The male-to-female ratio was 13:1.

There was predominance of simple homicides (92.3%), with greater occurrence on Sundays (16.7%), in the night shift (40.1%), revenge being the main reason for the crime (32%), firearms being the main means used (89.2%), and most of victims were affected by 5 or more projectiles (27.0%). Regarding the number of body injuries, there was a more significant number of multiple injuries (77.8%) [Table 2].

Regarding the number of body regions affected, victims were more frequently affected in 2 regions (36.5%). Head injuries

Table 1: Distribution of homicide victims according to years, sex, age group, involvement with drugs and criminal history

Variables	n (%)
Years	
2015	41 (24.4)
2016	40 (23.8)
2017	43 (25.6)
2018	44 (26.2)
Sex	
Male	156 (92.9)
Female	12 (7.1)
Age group (years)	
0-9	1 (0.6)
10-19	28 (16.7)
20-29	61 (36.3)
30-39	36 (21.4)
40-49	17 (10.1)
50-59	15 (8.9)
≥60	5 (3.0)
Involvement with drugs*	
Yes	58 (70.7)
No	24 (20.3)
Criminal record*	
Yes	56 (65.9)
No	29 (34.1)

*Some police inquiries did not provide this information

Table 2: Distribution of victims according to homicide characteristics

Variables	n (%)
Homicide type	
Simple	155 (92.3)
Multiple	13 (7.7)
Day of weeks	
Monday	24 (14.3)
Tuesday	26 (15.5)
Wednesday	20 (11.9)
Thursday	18 (10.7)
Friday	26 (15.5)
Saturday	26 (15.5)
Sunday	28 (16.7)
Homicide time	
Morning	37 (22.2)
Afternoon	45 (26.9)
Night	67 (40.1)
Dawn	18 (10.8)
Motivation	
Futile	24 (18.8)
Trafficking	23 (18.0)
Revenge	41 (32.0)
Passionate	7 (5.5)
Felony murder	10 (7.8)
Others	23 (18.0)
Method used*	
Firearm	148 (89.2)
Sharp objects	11 (6.8)
Others	7 (4.2)
Number of projectiles	
1	31 (20.9)
2	31 (20.9)
3	10 (20.3)
4	16 (10.8)
≥5	40 (27.0)
Number of body injuries*	
Single injury	37 (22.2)
Multiple injuries	130 (77.8)

*Some police inquiries did not provide this information

were identified in 68.3% of victims, while face injuries represented 35.3% [Table 3].

There was an association between the presence of head injuries and number of body injuries ($P < 0.05$) [Table 4].

DISCUSSION

Violence is recognized as a worldwide public health problem.^[1] In addition to interrupting life, homicide causes adverse effects among victims' relatives, as well as in society, generating a feeling of insecurity and contributing to impairing the socioeconomic development of countries.^[3]

In the present study, male gender was predominant among homicide victims. This finding is in agreement with data from the World Health Organization, for the six regions of the

Table 3: Distribution of victims according to body regions involved

Variables	n (%)
Number of body regions involved	
1	45 (26.9)
2	61 (36.5)
3	32 (19.2)
4	21 (12.6)
≥5	8 (4.8)
Head injury	
Yes	114 (68.3)
No	53 (31.7)
Face injury	
Yes	59 (35.3)
No	108 (64.7)
Thorax injury	
Yes	79 (47.3)
No	88 (52.7)
Upper limb injury	
Yes	39 (23.4)
No	128 (76.6)
Lower limb injury	
Yes	14 (8.4)
No	153 (91.6)

world,^[2] and from previous studies carried out by researchers in Brazil,^[8] in India,^[18] and in Taiwan.^[14] A possible explanation for this result would be the greater exposure of male victims to outdoor activities, this way becoming more exposed to stress, frustrations, and violence.^[19] However, women are more likely of becoming victims of domestic homicides due to the physical disadvantages of offering resistance to violence.^[19]

According to the global study on homicide,^[3] in some countries in Asia and Europe, homicide rates are approximately equal between sexes. Homicides involving males can be considered to be influenced by unstable factors, such as socio-political development and trafficking, which cause rate peaks. In contrast, female homicides are affected by long-term issues such as social roles, social norms, and the situation of women in society, making female homicide rates more stable.^[3]

In this research, the occurrence of homicides was higher among young adult individuals, similar to the worldwide trend.^[2] Young adults are the main victims of homicides, mainly due to social inequalities, school exclusion, lack of employment, and future perspectives.^[20] Another factor may be related to family conflicts, capable of taking young people to the world of drugs, being an environment that encourages criminal practices.^[21] In the region of the Americas, homicides involve gangs and organized crime in most cases with firearm injuries, and these factors are favorable to the prevalence of young people as victims and perpetrators of homicides.^[3] Although women generally face much lower risk of homicide than men, the age profile of women follows the pattern of male victims.^[3]

Table 4: Distribution of head injuries according to victim and homicide characteristics

Variables	Head injuries		P
	Yes, n (%)	No, n (%)	
Sex			
Male	105 (67.7)	50 (32.3)	0.603
Female	9 (75.0)	3 (25.0)	
Involvement with drugs*			
Yes	37 (64.9)	20 (35.1)	0.880
No	16 (66.7)	8 (33.3)	
Criminal record*			
Yes	34 (61.8)	21 (38.2)	0.331
No	21 (72.4)	8 (27.6)	
Homicide type			
Simple	102 (66.2)	52 (33.8)	0.052
Multiple	12 (92.3)	1 (7.7)	
Method used*			
Firearm	102 (68.9)	46 (31.1)	0.568
Sharp objects/others	10 (58.8)	7 (41.2)	
Number of body injuries*			
Single injury	18 (48.6)	19 (51.4)	0.004
Multiple injuries	96 (73.8)	34 (26.2)	

*Some police inquiries did not provide this information

Involvement with drugs and criminal record was high, revealing a relationship with homicides in the region. Drugs are related to crime through three mechanisms, psychopharmacological, which refers to the propensity of individuals to commit violent crimes under the influence of psychoactive substances; economic-compulsive, through the motivation of financing their habits; and systemic, linked to the activities of traffickers.^[3] A study carried out in a municipality in the southeastern region of Brazil found that almost one-third of homicide victims consumed alcohol and drugs, being more frequent among men, young people, blacks and those with low schooling.^[22] The involvement with drugs can represent an opportunity for young Brazilians, because difficulties of life, limited access to education and job market, as well as social exclusion, make these individuals to lose interest in studies and work and begin to attribute significance to the visibility and immediate recognition that trafficking provides.^[22] Measures that provide adequate treatment for drug users are beneficial both for their health and for reducing the risk of involvement in crimes, reflecting on positive effects on their lives and society.^[3]

It was also observed that the majority of homicides occurred due to revenge, with the predominance of simple homicides occurring in the night shift and during weekends. The higher frequency of violence during the night shift and weekends corroborates other findings.^[15,18] This can probably be explained by the fact that, during this period, people go out to places in search for fun and leisure, with large concentrations of people and frequent exposure to alcohol and drugs.^[23]

The means used in the vast majority of cases were firearm and this predominance is in agreement with a previous study.^[8] In 2017, over half of homicides were carried out with weapons worldwide, with the region of Americas accounting for three-quarters of homicides with firearms.^[3] In Brazil, from 1996 to 2018, of the total death notifications registered by assaults in the mortality information system (SIM) ($n = 1,168,880$), 69.7% of Brazilians were killed by firearms, with an increase of almost 80.0% in the period.^[24] This increase may indicate that public disarmament policies have not been consistent over time and that there have been no effective strategies to reverse this process and minimize the impacts of firearm violence on the population's health.^[23]

It was observed that countries with high homicide rates by firearms tend to have a higher number of homicides, which may indicate an association between firearms and high levels of violence.^[3] The wide availability of firearms in the Americas, together with the proliferation of gangs and organized crime, may explain why many countries in the region suffer from higher number of homicides than expected from their level of development.^[3]

The head region was affected in more than half of cases, while face injuries reached more than one-third of the total affected areas. Silva *et al.* highlighted that the face is the locus of uniqueness and identity of the human person, reporting that several factors can explain the pattern found in their study, such as subjective issues in the construction of identity, the place of men and women in contemporary society and the risk behaviors observed in adolescents, youth, or adults.^[15]

The etiologic agent of head and face injuries varies among countries and even within the same country.^[25] This variability depends on socioeconomic, cultural and environmental factors, awareness measures, and traffic education, becoming a matter of discussion among researchers.^[26] Despite the vast consequence of homicides, nonfatal interpersonal violence is more common^[1] and recognized as one of the main etiological factors of head and face injuries.^[9-14] A study carried out in a forensic medical service in the same municipality of this research identified that the prevalence of head and face injuries due to physical violence against older adults was 42.9% and there was a predominance of soft-tissue injuries that affected more than one region of the face.^[27] In the study by Cavalcanti *et al.* in victims of car accidents, the pattern of head and face injuries differed, being higher on the face (17.4%) than on the head (7.8%).^[28] The increasingly important role of violence as an etiological factor for head and face injuries may be related to the reduction of injuries related to traffic accidents due to current safety measures.^[29] However, in view of the global growth of injuries from external causes, there is need to improve current policies and adopt more efficient preventive measures to reduce these rates.^[30]

There was association between the presence of head injury and number of injuries. This fact may be related to the explicit desire to kill the victim through greater number of firearm shots in the head region.

As study limitations, it is possible to observe the impossibility of investigating the cause and effect relationship, since this study has a cross-sectional design, the use of convenience sampling and possible data incompleteness and inconsistencies in the definition of the basic cause of deaths. However, despite these aspects, data described here are extremely relevant, as they not only characterize the victims and the profile of injuries, but can be used by managers for the implementation of security measures aimed at reducing the occurrence of homicides.

CONCLUSION

The prevalence of head and face injuries resulting from homicide was high, with a predominance of young men, drug users and those with criminal record as victims. There was an association between presence of head injuries and number of injuries.

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Conflicts of interest

There are no conflicts of interest.

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